

Respiratory syncytial virus infection in patients with congenital heart diseases – when timing in everything and ECMO is not always a solution.

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INTRODUCTION: Children with hemodynamically significant congenital heart diseases (CHD) are at elevated risk of morbidity and mortality due to respiratory syncytial virus (RSV) infection compared with their healthy peers.

We are presenting two challenging case reports of RSV infection in CHD patients with complicated clinical course and different outcomes.

CASE 1

- A preterm newborn (36 weeks of gestation) at 3 days of age was diagnosed with CHD - coarctation of aorta and aortic arch hypoplasia.
- Patient was in critical condition on admission to our NICU department.
- Immediate surgical repair of CHD was performed. After operation respiratory failure developed due to severe pneumonia.
- In ICU for 86 days and dependant on mechanical ventilation for 38 days.
- Molecular tests from bronchoalveolar lavage - type B RSV infection. *Stenotrophomonas maltophilia* pneumonia.
- Treatment: antibiotics, medication for respiratory tract obstruction and mechanical ventilation for respiratory failure, inotropic agents and diuretics for heart failure.
- Management were effective. Patient was discharged from the hospital after 3,5 months fully recovered.



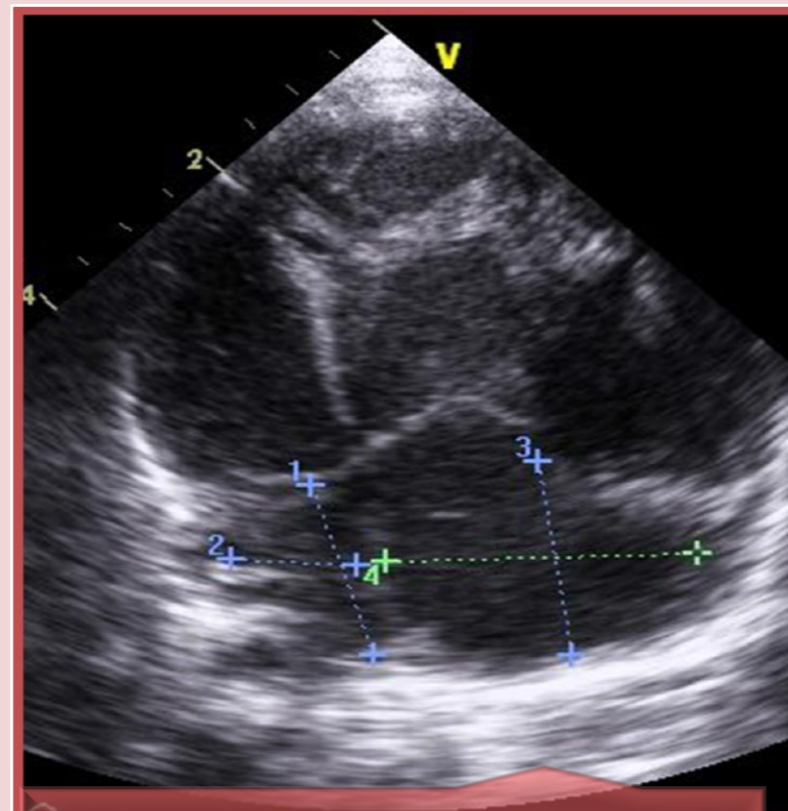
CASE 1 Chest X-Ray on admission



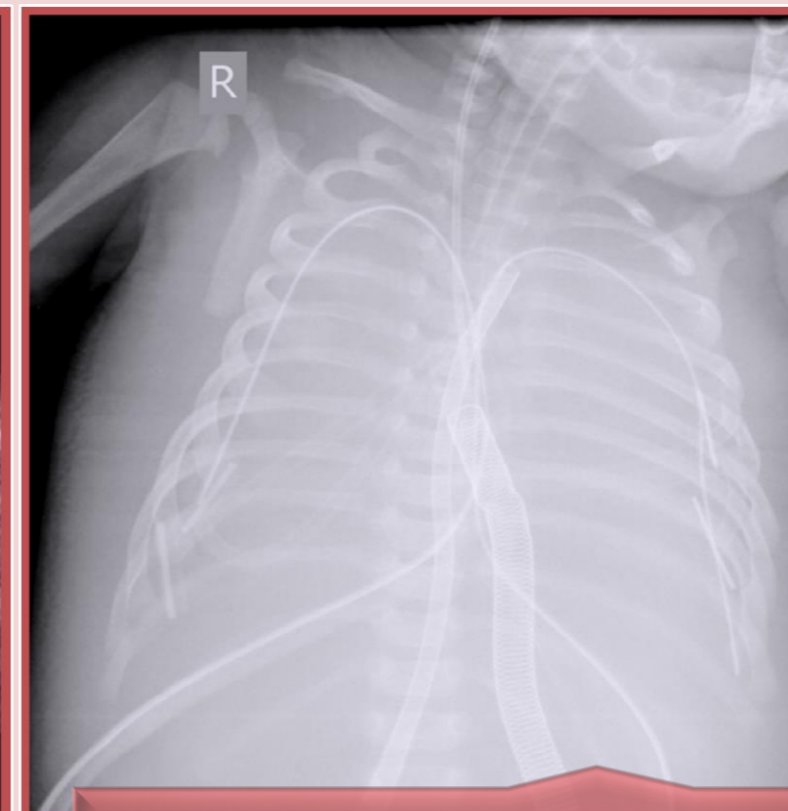
CASE 1 Chest X-Ray on discharge

CASE 2

- 7 weeks old infant presenting with cough, signs of respiratory and cardiac failure was admitted to the hospital.
- Bronchiolitis and pulmonary arterial hypertension (PAH) were suspected at admission.
- US and cardiac CT confirmed a partial anomalous pulmonary venous return.
- Molecular assay for RSV - RSV pneumonia.
- Deterioration despite maximal treatment, right heart failure, PAH, hypoxemia was present.
- Patient was on maximum doses of sympathomimetics.
- Lactacidosis, hypercapnia were prominent.
- Extracorporeal mechanical oxygenation (ECMO) for 17 days – ineffective.
- After 3 weeks in ICU his condition deteriorated into the terminal lung and heart failure, cardiogenic shock, patient was haemodynamically unstable, the ECMO failed working and patient died.



CASE 2 US on admission



CASE 2 Chest X-Ray after 3 weeks in ICU

CONCLUSION:

- RSV is the most common cause of respiratory tract infection in infants.
- Premature infants with CHD are at increased risk of complicated RSV clinical course.
- Long hospitalisation due to the infection and death during the first year of life.
- CASE 2 was lethal due to:
 - the combination of untimely diagnosis of underlying cardiac pathology with prominent PAH at the start of infection,
 - cumulative effects of RSV infection with secondary inflammatory changes in the lung,
 - complex cardiopulmonary interactions, and
 - presence of cardiopulmonary failure at the beginning of hospitalization.
- While the timely diagnosis and interventions were the main positive factors for the survival and better prognosis for CASE 1

TAKE HOME MESSAGE

- None of these patients had the passive immunisation with palivizumab against RSV infection. Clinical course of RSV infection could be less critical if timely immunoprophylaxis with palivizumab would be used as CHD patients are the target population.

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